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HOW TO SWIM

A PRACTICAL TREATISE UPON THE ART OF NATATION
TOGETHER WITH INSTRUCTION AS TO THE BEST
METHODS OF SAVING PERSONS IMPERILLED
IN THE WATER, AND OF RESUSCITATING
THOSE APPARENTLY DROWNED

BY

CAPTAIN DAVIS DALTON

Champion Long-Distance Swimmer of the World
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Corps, etc.

WITH ILLUSTRATIONS DRAWN FROM LIFE

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TO THE PRESIDENT AND MEMBERS
OF THE
UNITED STATES VOLUNTEER LIFE-SAVING
CORPS

THIS BOOK IS DEDICATED



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HOW TO SWIM



HOW TO SWIM

CHAPTER I

INTRODUCTORY

FEW persons know how to swim. By this statement I do not mean to imply that there is not a strong minority among the residents of a seacoast or a river or lake front, who can keep their noses above water for a time, and even propel themselves along at a moderate rate of speed. But of the whole population of a country these swimmers make up only a small fraction, and even among them there are very few who are properly expert in the water. How many men who deem themselves good swimmers can keep afloat an hour

with their clothes on ? How many are there who do not exhaust themselves with useless movements so that they must leave the water or sink, long before their powers ought to give out ? How many who can support themselves and another person besides in the water ? Not many.

Again, how many women can swim at all ? For a lover of swimming, there is something pathetic in a visit to a popular seaside resort, where hundreds of women venture waist-deep into the sea, and seizing the ropes churn up and down, screaming partly with pleasure, partly with fear, while a dozen damsels, “ good swimmers,” make triumphant progress to the raft a hundred feet beyond the line of breakers.

This state of affairs is wrong. Swimming is not a difficult art. Every healthy person, man or woman, can learn, and ought to learn, to keep afloat in the water ; most men and a large proportion of women can learn to sustain themselves fully clothed even to their shoes, and most persons, properly trained, are able, under

ordinary conditions, to save another person from sinking.

But the ability to accomplish these things comes of proper training. Swimming is an art, and, like other arts, must be learned. To man it is not a natural gift. There is an ancient theory that it is; that a man cast for the first time into deep water will keep himself afloat as a dog will, or a horse. "Why should he not?" ask the theorists. "The specific gravity of a human being is just about equal to the specific gravity of water. Lying upon his back a swimmer can float without aid from hands or feet. To keep one's head clear requires but little effort; even an inexperienced man ought to make this effort." Relying upon this, many persons who ought to have known better asserted that the best way to teach swimming was to "chuck the pupil in and let him take care of himself." The fallacy of this reasoning has been demonstrated by many perilous experiences. A moment of consideration will convince the most superficial thinker that the argument is baseless. Although it is

true that the specific gravity of the whole human being is equal to that of water, nevertheless parts of the human being are considerably heavier than water, and the heaviest part is the head, where the breathing apparatus is situated.

In “floating” the head must be in such a position that it is upborne as much as possible by the water. If it lacks this sustaining force—that is, if it be held entirely above the surface—it is far heavier than water; its weight destroys the balance of gravity, and, unless he can use his arms and legs properly, the swimmer sinks. Now it is the tendency of novices to hold the head high, and in keeping it high the inexperienced man soon wearies himself with useless struggles, breathes at the wrong time, fills his lungs with water, destroys their lifting power, and so goes down. The natural struggles of a man do not keep him afloat. The natural struggles of animals lift their heads. If a dog falls into the water, he raises his nose and walks as he does on land. But for a man the motions of swimming are entirely unlike

any movement that he makes in daily life, and before he can learn them, in nine cases out of ten, he is drowned.

But even those persons who do hit at once upon the movements and positions necessary in maintaining themselves at the surface—nay, even those who finally become at home among the waves and learn to push through them with a certain degree of speed, do not necessarily, or even probably, become good swimmers. For swimming, I repeat, is an art like other athletic arts. It depends upon natural principles. In a book of this character any consideration of the physical laws involved in swimming would be out of place; suffice it to say that men equipped for the work have studied these laws, and have ascertained the movements that are best for taking advantage of them.

The aims of a swimmer are three: he must keep afloat; he must attain speed; he must economise effort. The second of these aims, and, indeed, ultimately the first, depends upon the third. In order to proceed rapidly a swimmer must use only those movements that

propel him; every slightest flexure of arm or leg that does not help him along hinders him. In order to make long distances he must save his strength; every superfluous gesture exhausts some of it unnecessarily. Among those persons who have learned swimming hap-hazard, there are few who do not hinder their progress and wear themselves out with misdirected and needless movements. Moreover, a false stroke, once thoroughly learned, is not easily to be corrected; even practice, though it has the advantage of familiarising a swimmer with the water, has the disadvantage, for one who has begun badly, of fixing every habit of clumsiness.

The implication is manifest: beginners in swimming should learn carefully the movements which have proved most effective and most economical of effort. It is my aim to describe these movements clearly, so that my readers may be able to execute them. But, after all, for those persons who are within reach of a competent—not a mediocre—instructor, the best method of learning to swim

is to take direct lessons. In this connection I should like to impress upon my readers the expediency of providing for such an instructor in every community, nay, particularly in every school-house.

In England swimming is a part of the curriculum of most schools; in London it is a part of the public-school system. In America it has been regarded as a pastime rather than as an art. A pastime it is, of the noblest type; for while it is pleasing the senses, it is at the same time strengthening the muscles, purifying the skin, and developing habits of alertness and self-possession.

Moreover, over other pastimes it has this advantage: it gives to its devotees a particular training that enables them to save their own lives and the lives of others in emergencies that are likely to confront anyone of us at some period of his career.

But I need hardly dwell upon the desirability of learning to swim. It is acknowledged by everyone. Nevertheless, while our schools and colleges are recognising baseball and football—

sports whose merits I do not desire to cry down—as necessary complements to science and classics in the development of the finest type of man, they leave swimming, as healthful as either of these exercises,—and more useful, is it not, than either of them?—to be learned hap-hazard or not at all. This is not as it should be. Skill in swimming ought to be part of every man's and every woman's equipment for life. And since in the majority of cases the advantage of a good swimmer who can sustain himself clothed and, if need be, can rescue another from drowning, over an imperfect swimmer, who exhausts himself with needless effort, is due to proper training at first, the value of such training can hardly be overestimated. Swimming, then, should be taught in the public schools of America. In every school building there should be a tank with a properly equipped instructor, and classes should go to him as regularly as they go to their teacher of arithmetic. The first cost of establishing such a system would be large, but the cost of keeping it up would not.

Even if it should be a heavy item in municipal budgets, however, it would pay for the expense in the pleasure and health it would give to the children and in the saving of life that it would bring about.





CHAPTER II

HAVE CONFIDENCE

THIS is the fundamental rule of swimming. The rules for directing the movements of lungs, arms, and legs depend upon this. If a swimmer loses confidence in his power to keep up; if he distrusts the movements he is making; if he goes into a flurry and wastes his breath and his strength with useless kicking and paddling, he is done for—unless help be near.

Now to write the words “ Have confidence ” is easy, and to read them and seem to take them to heart is easy. But for the novice really to have confidence at the moment when the first cold wave rises above his—or her—waist is, I have observed, quite another affair. But I have observed, also, that, allowing for

differences in temperament, the novices who understand the reasons why they are justified in having confidence acquire it, on the whole, sooner than those who are led into the water with the mere repeated assurance, “ It won’t hurt you,” as one leads in a horse.

Therefore I shall touch lightly here upon the reasons why human beings—particularly if they be rather stout, and most particularly if they be women—need not fear the water in its ordinary peaceful mood.

The chief reason is that the human body as a whole is of about the same weight as water. Some persons are lighter than water, some heavier. The heavier persons are those who are thin—and therefore do not displace a great bulk of water—and at the same time heavy of bone. Stout persons, who present to the up-bearing influence of the sea a surface great in proportion to their weight, and women whose bones are smaller in relation to their statures than those of men, can float in salt water without sustaining themselves by a single wave of the hand.

For them swimming would be an easy art, if their weight were evenly divided. Unfortunately, it is not. The legs, arms, and particularly the head, are heavy. Left to themselves they would sink. They are lifted by the trunk—mainly by the upper portion of the trunk where the lungs are placed. As long as the lungs are filled, some part of the body will remain above water. I have found that bit of knowledge comforting to novices.

Of course, there is a difficulty about keeping clear the nose and mouth (the single portion of the body which must not be submerged), because the nose and mouth are in the head, and that, being chiefly bone, is the “ sinker ” of the body. However, let the beginner not be afraid because of that difficulty. If he is content to lift merely his nose above the surface (instead of attempting, after the manner of most beginners, to lift his whole head and even his shoulders), he will find that a very slight effort will suffice to keep his organs of breathing free of water.

In relation to specific gravity there is a differ-

ence between fresh water and salt water. In fresh water you are not upborne as strongly as you are in the sea. I shall try to show the beginner, in a few words, just what support he may rely upon finding in inland waters and upon the coast.

1. The legs, being solid parts, are heavier than fresh water. Until the lungs become filled with water, however,—having breathed in water instead of air,—the body will float.

2. The legs and arms are lighter than salt water, and will be supported by it, so that a human body would not sink in salt water, though the lungs were filled as above, except for the great specific gravity of the head.

3. Therefore, a person throwing himself on his back in salt water, and extending his arms, may easily lie so as to keep his mouth and nostrils free for breathing ; and by a small motion of his hands may prevent himself turning, if he should perceive any tendency to it.

4. In fresh water, if a man throws himself on his back near the surface, he cannot long continue in that situation, except by proper action

of his hands on the water. If he uses no such action, the legs and lower part of the body will gradually sink till the swimmer comes to an upright position, in which he will continue suspended, the hollow of the back keeping the head uppermost.

5. But if, in this erect position, the head is kept upright above the shoulders, as when we stand on the ground, the immersion will, by the weight of that part of the head that is out of water, reach above the mouth and nostrils, perhaps a little above the eyes, so that a man cannot long remain suspended in water with his head in that position.

6. The body continuing suspended as before, and upright, if the head be bent quite back, so that the face looks upwards, all the back part of the head being then under water, and its weight consequently in a great measure supported, the face will remain above water quite free for breathing, will rise an inch higher every inspiration, and sink as much every expiration, but never so low that the water may come over the mouth.

7. If, therefore, a person unacquainted with swimming, and falling accidentally into the water, could have presence of mind sufficient to avoid struggling and plunging, and to let the body take this natural position, he might continue long safe from drowning, till perhaps help would come. For as to the clothes, their additional weight while immersed is very inconsiderable, the water supporting it ; though when a swimmer comes out of the water, he finds them very heavy indeed.

When a beginner has come to be on good terms with the water, he is ready to learn the two branches of the art of swimming—how to make strokes and how to breathe.

It is perhaps well at this point to touch upon the question of artificial aids to the beginner—belts, slings, etc., which support the swimmer in deep water until he can support himself. Without entering upon a long discussion of this question—of which both sides have been too frequently presented—I may say here that I do not use nor recommend the use of artificial

aids; I believe they inspire in the novice a false confidence which is apt to vanish when the artificial support is withdrawn. I take my pupils to the sea or river—or, if open-air bathing is not accessible, to a shallow tank,—and let them find their legs in the water and wade out till the ripples lap against their chins and the pressure from below is almost lifting them—that shows them how buoyant water is,—and I teach them to submerge themselves and to hold their breaths beneath the surface, and, in short, make them at home under water before I make them at home at the surface. But in doing this I am very careful—and I urge others to be equally careful—not to force any person under water. Particularly ladies and children, plunged beneath the surface against their will, are apt to be terrified, and to lose confidence not only in their own powers but also in the judgment of their teacher; and confidence, once lost, is not easily to be regained, if indeed it be regained at all.

But beginners who are not frightened by their friends or by their instructors soon learn

that a ducking is no serious matter; indeed most persons presently begin to consider it a pleasure. For those persons, when they begin to learn the strokes, little artificial help is necessary; a hand under the side is enough, and this may be removed sooner than a cork belt or a sling or any cumbrous bit of apparatus. For even if the novice happens to sink, it is no serious matter, attended perhaps with strangulation. Novices trained under this system know what to do when they sink.

Therefore, to those who desire to learn swimming without a teacher, I say, accustom yourselves to the water. Go in first to your knees; then to your waist; finally to your neck. Then go in to your shoulders and stoop until you are entirely submerged. Remain under water at first for a second only. If the water in your nostrils troubles you, you may at first, if you like, close your nose, before you sink, with your thumb and finger—but do not let this become a habit. Gradually accustom yourself to remaining under the surface for increasing periods of time with nostrils

open. Practice will enable you to hold them free of water, and the time may come when, being deep in the sea, you will need both hands to raise you to the surface. For this time it is well to be prepared. Without attempting at first, then, to swim, thoroughly accustom yourself to the feeling of being under the water. Learn to open your eyes. Do not stare, however, as many persons do at first, for salt water pushes its way into eyes opened too wide, and makes them smart. At first, do not keep your eyes open too much. After a time you will find that you can raise your lids in the water as easily and comfortably as you can in the air.

Learn to know the look of things in the curious "filtered" light beneath the surface. Presently you will be able to distinguish objects upon the bottom. Then test yourself. Drop three porcelain eggs, one red, one white, and one blue, near you, and try to pick up whichever one your friends may call for. At first you will find some difficulty in sinking to the bottom at all. In order to do this it is

necessary either to exhaust the lungs of air before you crouch, or else to plunge head downward, legs upward, and, when you have found your egg, to gather your feet beneath you and stand up.

You will be surprised to find how few experiments in water shoulder-deep will enable you to do this. Having accomplished it, you are ready to learn swimming.

It is obvious, therefore, that the beginner may be confident of his ability to keep himself afloat, after he shall have learned the slight necessary movements. A swimmer, properly trained, can sustain himself for periods of time that seem unattainable to those persons who wriggle and struggle through the water and call that swimming. I have passed eight hours in the sea with my clothes on; in 1890, when I swam across the English Channel, I was in the water twenty-three and three-quarter hours, and (having been swept out of my course by the tide) swam sixty miles.



CHAPTER III

THE STROKES

THE BREAST STROKE

WHEN you have accustomed yourself to the idea of putting your head under water, and find that no harm results from it, then wade out from the shore up to your chest, face the shore, and join the palms of the hands

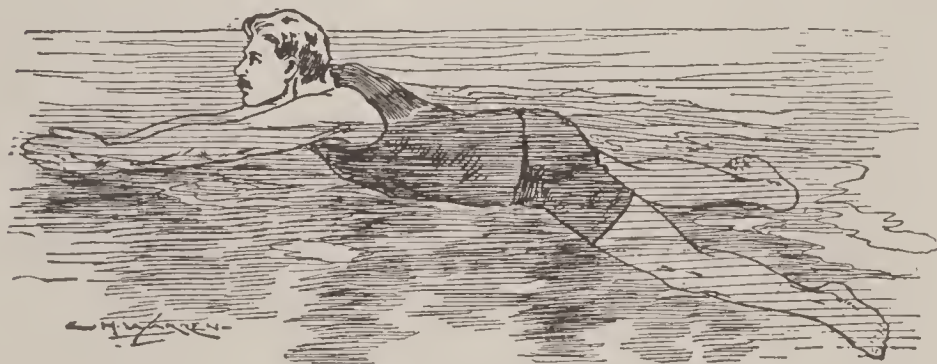


BREAST STROKE. FIG. 1.

together at the breast with the fingers tightly closed, as in Fig. 1. This is most important, as

I have noticed that beginners, when learning by themselves, keep the fingers apart, thereby offering a greater resistance to the water without any gain. If man had webs joining his fingers, like a seal, he would make greater headway with the same amount of exertion—but he has not.

Therefore keep the fingers closed and shoot the arms straight out to the position in Fig. 2;

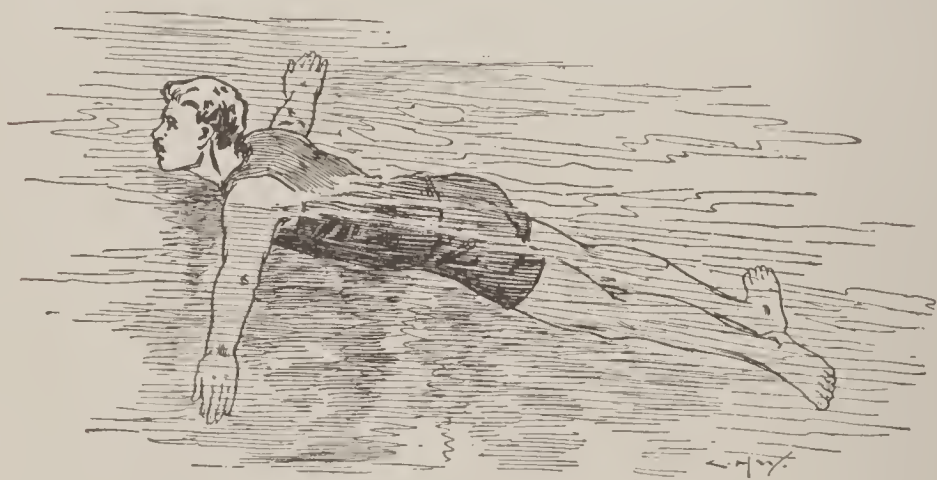


BREAST STROKE. FIG. 2.

this stroke should be a quick one, the hands being kept about two inches under water. When the arms are stretched out to their fullest extent, then turn the palms of the hands flat, lying almost horizontal to the surface, and make a semicircular sweep to position of Fig. 3, with the arms straightened out all the time and the palms of the hands almost horizontal.

Be careful not to draw the arms farther back than to a line perpendicular to the shoulders. As you bring the hands back to the first position again, gradually turn them on the way, so that the palms of the hands meet again at the breast, ready for the next stroke.

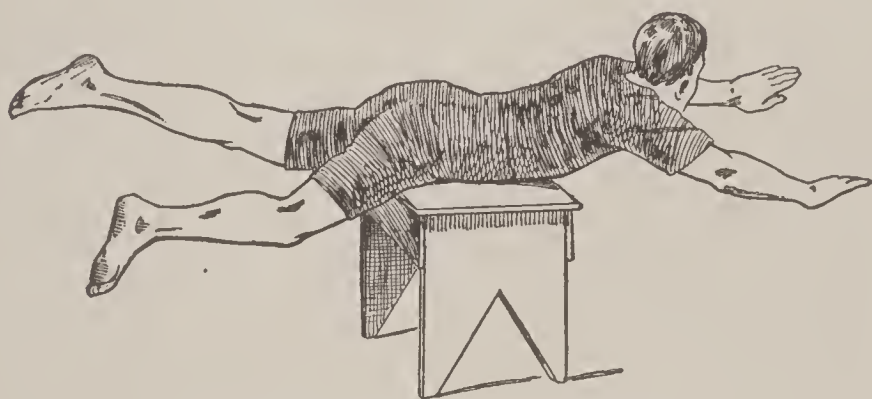
I should advise beginners to practise the three strokes for the hands and arms, on the



BREAST STROKE. FIG. 3.

shore first. One can get a far better idea of it on dry land. Don't forget to count aloud as you make the strokes, for this will help you to keep in time with the leg strokes. When you have thoroughly learned the arm strokes (but not before), begin with the leg stroke, which is much more difficult. That is one reason why

I advise a beginner to learn the arm strokes first, because if he should learn the leg strokes first and then attempt to swim by himself, the upper part of his body would sink, and he would come near to drowning if no help was near; whereas by learning the arm stroke first he can always keep his head above water, even if he is not able to swim.



PRACTICE OUT OF THE WATER.

Again, the leg strokes demand a good deal of practice before a person can honestly say he can do them properly. The reason of this is that a person has more control over the arms than legs. Moreover, he can see himself doing the arm strokes, but not the leg strokes. For this reason, most swimmers have a better arm than leg action. Perfection in use of the legs

is an absolutely essential point to good swimming; speed, style, and stamina can only be obtained by a swimmer who has a good leg action. Therefore I advise everyone to give a great deal of attention and time to perfecting the leg strokes. The lower limbs become properly supple only after practice.

To learn the correct leg action it is necessary to have the help of either a friend or instructor, the latter for preference. Begin by practising the legs on shore. Place a cushion over a stool and lie on it, balanced upon the abdomen. Then get a friend to grip your ankles and pull your legs straight out with the heels touching and the toes directed outwards; then let him push your feet toward your body as far as possible, as in Fig. 1, care being taken all the time to keep the heels together so that the feet form a straight line, pointing in opposite directions.

Then pull the legs out straight, as far apart as possible, as in Fig. 2, the feet being still in a horizontal line with each other; then, still keeping the legs straightened out, bring them

together, as in Fig. 3, with the heels touching. This is a most important movement, and one usually slurred over by those who learn swimming without a teacher. The water thus compressed between the legs pushes the body forward. Some authorities assert that it is the chief propelling factor. Without going as far as that, I am sure that it is an important factor.

As you are about to bring your heels together, at the end of this movement, suddenly relax the ankle joints and *flap*—I can think of no better word—your feet together until the soles almost meet, and lie in line with the legs. This slight movement of the feet gives you a powerful impulse forward. During the “recovery” of your legs to the position nearest the body, keep your feet always in line with your motion, so that they may not impede you.

Repeat these strokes until you are tired. Next day enter the water and try the leg movements, holding meanwhile to the side of the bath or to a boat, if alone, or else persuade a friend to hold you up in the water with his left hand placed under your chest. With his

right, he can work your left foot in the proper positions, while your right foot must be managed by yourself. When you have learned both arm and leg strokes thoroughly, try them together. If you are teaching yourself, wade out to your shoulders and push off from the bottom with your feet, at the same time shooting the arms forward to position 1; do not stop, but sweep the arms round to position 2; at the same time kick the legs out as far apart as possible, as in Fig. 2; then bring the legs and arms quickly back to position 3. This last stroke should be done the quickest. When the beginner can proceed five feet, under instructor, these strokes can be done slowly and thoroughly while the pupil is held up by the teacher. Finally, the latter can gradually draw his hand away until only one finger remains, and after a time draw that slight support away too, without the pupil knowing it.

The legs must not be dropped deep in the water, but must be held within a few inches of the surface. If they are allowed to fall too low their action merely lifts the swimmer with-

out urging him forward. The breast stroke is best for swimming in a rough sea and good for racing over a course of moderate length. It is not as tiring as the other faster strokes; at the same time, if done properly, it is pretty. Nothing looks neater than a good breast-stroke



SIDE STROKE. FIG. 1.

swimmer who can move through the water at a fair pace, without raising a ripple.

THE SIDE STROKE

The art of side-stroke swimming is easy to learn, once the beginner can do the breast stroke correctly, for the above-mentioned stroke is the groundwork of all the other strokes. One of the good features of the side stroke is that it can be done either on the left or right

side. It is well to be able to do both, especially when swimming a long distance, as one can change from one side to the other, thus giving oneself a rest; a very important thing for distance swimming.

The arm movements are best practised out of the water, as they are rather confusing at



SIDE STROKE. FIG. 2.

first, after the breast stroke. Try on the right side first; commence by stretching the left arm straight out in a line with the body. Hold the palm of the left hand turned outward. The right arm is drawn close in, with the hand touching the side, as in Fig. 1. Next draw the left arm back to the body and along it. Push the water behind you to position 2, at the same time shooting the right arm straight

out from the body, then bring the arms back to position 1, care being taken that the left arm passes through the water near the body, as in Fig. 3. After some practice with the right side, do likewise on the left side, working the arms vice-versa—the left arm working in



SIDE STROKE. FIG. 3.

and out from the body and the right arm doing the long sweeping stroke. The leg action is very similar to the leg movements in the breast stroke, the difference being that in this side stroke the legs are much closer together in the second position. Bring the legs up to the body as in Fig. 1 and shoot them straight out as in Figs. 2 and 3. Learn to do the arm and leg

actions together as in the illustrations. Accustom yourself to do this stroke as well on the left side as on the right.

When turning from one side to the other, always turn on the breast when reaching the first stroke on the side, and after reaching the first position on the breast stroke turn upon your other side, which brings you to the first position on your left side. This turning from side to breast back to side will be found rather difficult at first, but with a little practice it can be mastered.

THE BACK STROKE

Swimming on the back is one of the easiest and most useful strokes. Upon his back a swimmer can sustain himself much longer than in any other posture. But at first, for a beginner, to lie on the back with the ears under water is somewhat alarming. Each thrust with the legs threatens to push the head beneath the surface. That is why so many novices hold their head quite clear of the water. But this attitude sends their legs down too low,

presents a funny appearance, and, in short, is not at all conducive to good swimming. Therefore, before trying to swim on the back, the learner should accustom himself to holding his head back in the water with the ears submerged. The water will enter the ears, and that, to some persons, is disagreeable. I ad-

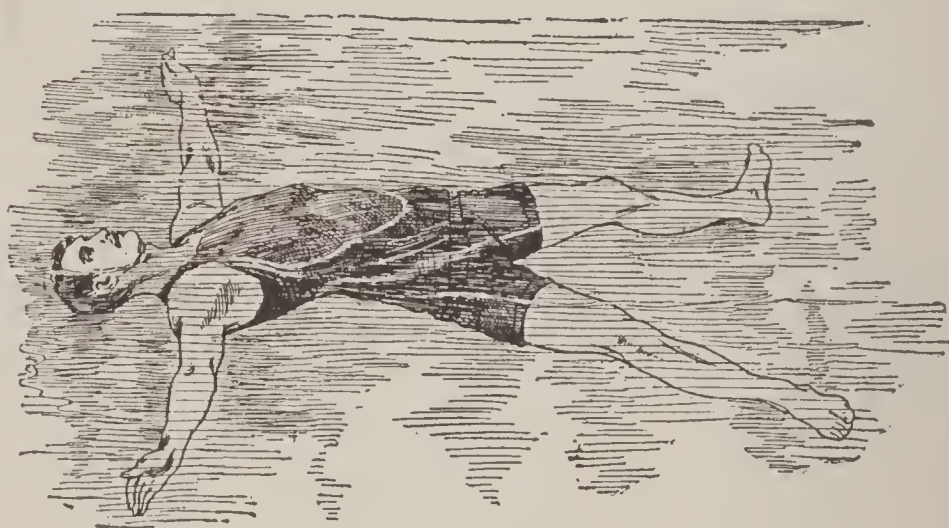


SWIMMING ON BACK. FIG. 1.

vise such persons to use a little cotton wadding at first, though I do not recommend this as a practice.

When the learner has accustomed his ears and head to lying upon and under the water, he is ready to swim on his back. He should begin by throwing himself backwards from a standing position in water not too deep. At once he should kick the legs out, holding them

somewhat apart; next he should bring the heels together with legs straightened. As in the breast stroke, this is an important movement, because the body is propelled forward by the action of the legs closing upon the wedge of water between them. When



SWIMMING ON BACK. FIG. 2.

the heels are together, draw them close to the body, into the preliminary position of the stroke. These movements are somewhat similar to those of the breast stroke. The arms should be kept close along the sides. After a few strokes with the legs, inflate the lungs and lay the head well back; this will lighten the body and prepare it to shoot

through the water more smoothly. Increase the force of the leg movements, but do not repeat them too rapidly. To increase the pace, use the arms, by extending them back beyond the head in a straight line with the body, as in Fig. 1, with the backs of the hands touching each other; then sweep the arms



SWIMMING ON BACK. FIG. 3.

through the water till they are in a straight line with the shoulders, as in Fig. 2, and continue the stroke till the palms of the hands touch the sides of the legs, as in Fig. 3.

A variation can be made in the arm strokes by using each hand alternately; start with the right arm straightened out beyond the head, and the left arm touching the left leg; then bring the latter arm out of the water, carry it

straight backwards beyond the head, and at the same time sweep the right arm toward the feet till the flat of the hand touches the right leg. The legs are kicked out while the right arm is shooting through the water; then the legs and left arm are pulled up and shoot out together. This is the fastest way of back swimming for a short distance.

It is possible to attain a good deal of speed with the back stroke—indeed, some experts have made almost as fast time as good side-stroke swimmers. But its chief value is not for racing, it is for long-distance swimming. It is the least exhausting stroke for traversing great distances, mainly because the posture of the back swimmer is (almost exactly) the easiest posture of all,—that of “floating” upon the water. The chest is inflated and high, the head is floating deep, and therefore supported by the water. In this position the mouth is well above the surface. At any time a tired back-swimmer may cease to move, and simply lying “spread-eagle,” with arms and legs outspread, may float and thus rest.

It was upon my back that I crossed the English Channel, and I did not find it once necessary to turn over during the passage of sixty miles.

Another good feature of the back stroke—as I shall explain in a following chapter—is its availability in the rescue of drowning persons.



SWIMMING ON THE BACK. ARMS FOLDED.

It is, moreover, the salvation of swimmers seized with the cramp.

THE ENGLISH RACING STROKE

The ambition of most beginners is to make fast time as soon as possible, and this is well. Nevertheless, I counsel beginners to be deliberate at first; to increase their speed by small

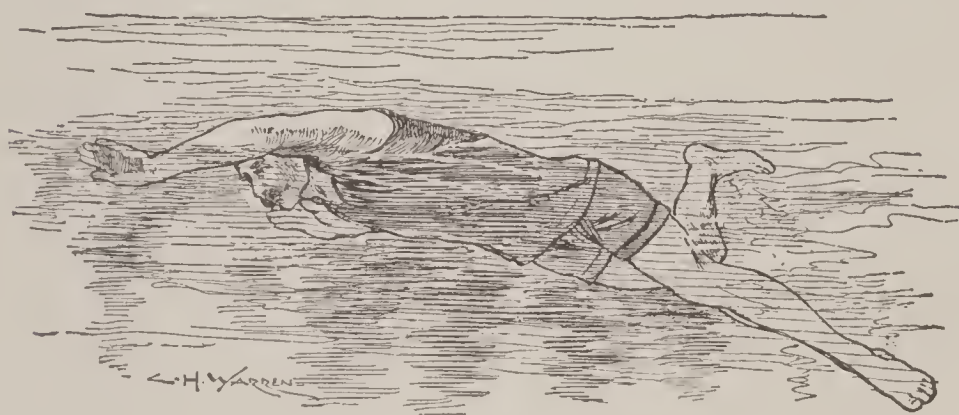
degrees; otherwise they are likely to acquire some false habit. They should learn to swim without splashing or struggling before they learn to swim fast; and when they have once gained the correct "form," they will find that their speed will increase naturally.

For rapid dashes, from one hundred yards to a mile, I have found the English racing stroke best, and I advise all swimmers to learn this style. To excel at it, however, means practice and a close attention to details, for the movements are somewhat complicated.

It is better to learn the arm movements first, as they are easier than those of the legs. It is advisable for a learner to persuade some one to enter the water with him and support him with a hand under the right side. For those who have learned the breast stroke this is not absolutely necessary, but even for them it is desirable, because it enables them to keep their minds upon their "form," without thinking of sustaining themselves.

To take the first position, lie upon the right side, draw your right arm snug against your

body, touching your side with your wrist. The fingers should be closed together and pointed forward. Throw the left arm out of the water and forward, with the palm of the hand turned away from the body. When the hand is somewhat in advance of the head, but

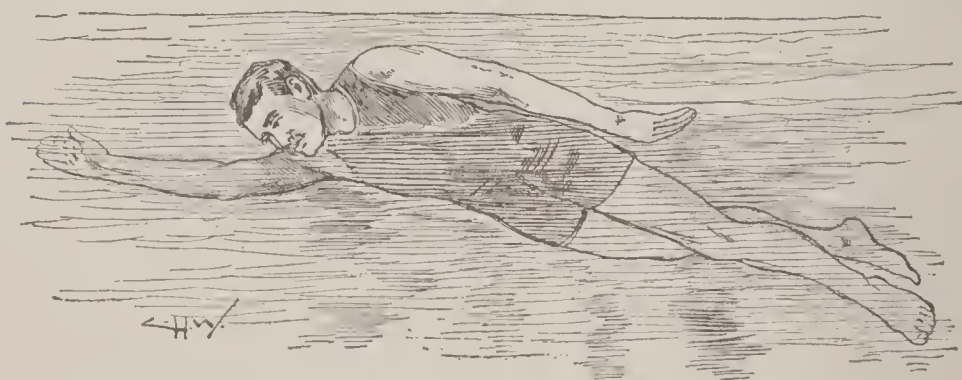


ENGLISH RACING STROKE. FIG. 1.

not directly in line with the body, cut it downward into the water, and draw it in toward the face, at the same time shooting forward the right arm to its full length. Do not check the movement of the left arm, but pull it down along the body. Both arms should be stretched to their utmost in opposite directions at the same moment. Then throw the left arm out of the water and forward, as at first, meanwhile drawing the right hand straight in

toward the body. Thus the right hand is working straight backward and forward, while the other is hauling the body through the water, as it were, and returning through the air for another grip.

A variation may be made by using the left arm as one would use an oar, from positions one to two; but this is very tiring, although



ENGLISH RACING STROKE. FIG. 2.

effective for a short distance. Another variation, also tiring and also effective for “dashes,” is performed by sweeping the right arm downward as one sweeps a paddle in canoeing.

Still another variation is a slight flip of the left hand, immediately after entering the water, which brings it with the least resistance to a position near the body. Analysed, the move-

ments of this little stroke are three: a vertical cut as the back of the hand enters the water, a horizontal cut, with the palm down, which carries the hand in toward the body, and another vertical cut which brings the hand into position to haul the water down along the breast. These three movements must be done in a flash, however, for they are only incidental to the stroke.

The breathing, which is very important in this stroke, is regulated as follows: from position two to one when the left arm is brought out of the water, the head sinks below the surface, and no air can be inhaled or exhaled. As soon as the left arm cuts into the water at position one, however, the head comes up, which allows the swimmer to eject from the mouth the water taken in at the previous movement. At once he must take in a good mouthful of air.

Having practised these movements until they are as natural to you as walking, you are ready to learn the leg stroke.

The first part of this difficult stroke resembles

in a measure the working of the blades of a pair of scissors. Lie upon your right side. Carry your right leg as far as possible behind you and your left leg as far as possible in front of you. Bend the right knee so as to increase to the utmost the distance from the toe of the right foot to the heel of the left foot. Hold the right foot in line with the leg, but the left foot at right angles with the leg.

Close the legs sharply toward one another—not quite together,—bringing the right toe to a position at the *left* of the left instep.

Now comes the second part of the stroke, called the “double kick.” Just before the legs touch, move the left foot sharply to the left (that is to say, upward, as you lie upon your side in the water) and the right foot sharply to the right (that is, downward) and then bring them together. This double movement creates a little whirlpool between the legs which shoots the swimmer forward. It must be performed very rapidly, for the whole leg action must be timed to correspond with the second movement of the arms.



RACING STROKE. SHOWING ARM AND LEG MOVEMENTS.

During the first movement of the arm, the legs are spread forward and back to their first position.

To be effective, this stroke must be done in perfect form. The left arm must take hold of the water at the instant when the legs begin to close together. It is important, also, that the arc described by the feet shall be as wide as possible. All other conditions being equal, the swimmer whose legs are longest and strongest will win the race. For the force of the "shoot" is dependent upon the violence with which the legs are brought together upon the "wedge" of water between them. It is the pressure against this "wedge" of the thighs, knees, calves, insides of the soles, and soles themselves that urges the swimmer forward. If you care to see an illustration of this shoot, open a pair of scissors and attempt to cut transversely the corner of an iron safe, or of some other hard, smooth object. As you close the scissors you will find that they push your hand away from the object.

In swimming, the body corresponds to the

scissors, and the water between the legs corresponds to the corner. Water, however, though not compressible, is stable to only a small degree. For this reason—and for others not as important—it is necessary to take in as large a wedge as possible between the legs, so that the base of motion may not escape before it becomes useful.

This is substantially the stroke used by all the well-known English racing men. Of course each racer has his particular variation, but the essentials—the palm of the left hand away from the body, and the “double kick”—are common among all.

In connection with this racing stroke it may be well to describe the best method of making the turn at the end of a bath in a race. It is an important piece of knowledge, for many races consist of “lengths” of baths. If in a bath sixty feet long, for example, a race of one hundred yards is to be contested, the swimmers must turn four times; and he who knows the proper method of turning may gain a couple of feet at each turn and not “get out of his stride.”

As you swim, gauge your distance so that your last stroke in each "length" brings the tips of the right fingers against the wall of the bath. Quickly throw the left hand over the right and lay the left palm flat upon the wall. The friction will give you leverage enough to throw your head over your arms and down beneath the surface. Meanwhile draw your feet under you, so that when you have dived and turned you will be crouched, as it were, for a spring, with the soles of your feet against the side of the bath. Then make your spring with all your force with the right arm stretched forward, and slightly upward. As you are about to emerge, bring the left arm into the first position, ready to continue your stroke. By this "shoot" you may cover ten or fifteen feet in an instant, while those swimmers who do not know the "trick" are blundering against the side and pushing off feebly, with legs not in position for a spring.

THE AMERICAN RACING STROKE

In the arm movements the American stroke differs very slightly from the English racing

stroke. In America the palm of the left hand is held toward the body instead of outwards. In the leg movement, however, the American stroke lacks the "double kick."

THE INDIAN OR "TRUDGEON" STROKE

Another favorite racing stroke in America is the Indian stroke, otherwise called the hand-over-hand. This is a very tiring style for the arms, and although effective for a hundred yards it is useless for a greater distance. The *modus operandi* is to lie on your breast with the legs drawn up and throw forward the right arm with the hand flat on the water. This movement, if done quickly and with force, slightly turns your body upon the right side. While you are throwing out the hand at the same time kick out the legs, as in the breast stroke; then, as the right arm sinks, press the hand swiftly downwards towards the feet, which help to keep the body up. As the left arm is in turn thrown forward, the body turns upon the left side and the legs are drawn up again preparatory for the next stroke. Thus the

swimmer writhes through the water with great rapidity. In England this stroke was introduced by the swimmer Trudgeon, who is said to have picked it up in South America. He brought it to high perfection, and it is sometimes called, after him, the Trudgeon stroke.

In general, with regard to all racing strokes, it may be said that, without a great deal of practice upon the part of the swimmer, they cannot be thoroughly learned. To be a good racer among racers, moreover, a swimmer must keep up his practice constantly.

SWIMMING LIKE A DOG

The name of this method explains the process. The swimmer lies on his chest, and moves his legs and hands alternately, exactly as a dog does when swimming. The legs are kicked out straight to the rear, the sole of each foot pressing the water alone, while the other foot is being drawn toward the body. The left foot is thrust backward while the left hand is being thrust forward and the right hand and leg move together. The hands paddle in front

of the breast, but the stroke is short and abrupt, not long and sweeping.

The chief use of this stroke is that it affords a change of action to the muscles, and if the swimmer has to traverse any considerable distances, he will find that a few occasional minutes employed in swimming like a dog will be very useful in relieving the strain on the muscles of both legs and arms.

FLOATING

Floating is the posture of rest for a swimmer. No down bed is as soft as the ocean; none is as comfortable—after the swimmer has learned how to balance himself in the water. This matter of balance, however, is somewhat difficult for the beginner to manage. The desirable posture is that which will enable the swimmer to lie motionless with his mouth—not necessarily any other part of him—above the waves.

Obviously, he should lie on his back. His forehead should be held deep in the water; his mouth and chin should be held high. His

chest should be as full of air as possible. His back should be “hollowed.”

In all methods of floating these things are essential; but in regard to the arms and legs there is some latitude for posture. The arms and legs may be stretched out as far apart as possible—in what is called the “spread-eagle” position. If the legs show a tendency to sink, they may be bent at the knees, so that the feet and calves hang limply down into the greater pressure of water beneath the surface, whereby they are more strongly upborne. The arms may be folded upon the chest or behind the back. The latter, indeed, is my favourite position for them; they lift the chest and head, so that the water does not wash over the face, and at the same time lower the centre of gravity, so that the body is less likely to turn over.

The prettiest position for floating, however, is that in which the body is held rigid in a straight line, with the legs crossed, the toes and the lower part of the face peeping above the water, and the arms lying above the head joined by locked thumbs, or at the sides. If

the body seems likely to roll over, a slight stroke with the hand upon the side which is lowering is sufficient to maintain the balance. In this position the arms form a counterbalance to the legs, and the body is poised upon a pivot, as it were, beneath the shoulders. An experienced swimmer can maintain the posture for half an hour.

Many persons with heavy bones find difficulty — sometimes insuperable difficulty — in floating. Such swimmers may perhaps find support if they will lock their toes, separate their knees, and draw their heels close to their bodies.

In fresh water, few swimmers can float at all.

It is in floating that the buoyancy of the air in the lungs is most noticeable. At every inspiration the body rises an inch, at every expiration it relapses to its former position.

SWIMMING IN CLOTHES

The ability to swim in “ street clothes ” is very valuable. At a moment’s notice it may be a necessary accomplishment for anyone in

saving his own life or in plunging into the water to save another. Swimming in clothes has been practised for many years in the French and German armies. It should be encouraged by everyone interested in the art.

Of course, it should not be attempted by a beginner. Not until a swimmer is thoroughly at home in the water should he enter it with his clothes on—and then he should be in bathing costume, except for his leather shoes. Shoes are the most cumbrous part of his attire ; if he learns to swim with them on, he will probably be able to sustain himself fully dressed.

Having overcome the difficulty of the shoes, the swimmer may add trousers to his uniform—and so on, increasing his weight by a garment at a time until he is in full street costume, even to his scarf-pin.

HOW TO REMOVE CLOTHES IN THE WATER

After he has learned to wear clothes in the water, the swimmer ought to learn how to take them off.

First come the shoes. Lie upon the back, draw the right foot as high as possible, lay it upon the left thigh, undo—or, better, cut—the laces, and with the left toe push the shoe partly off. Do not push it entirely off, for you will need the stiff sole in pushing off the other shoe—which is of course unlaced thoroughly before it is cast off. A few shakes of the feet will rid you of the half-removed shoes.

Next raise yourself erect and “tread water,” while you are taking off your coat. Slip the left shoulder and arm partly out of their sleeve, carry the right arm behind the body, grasp with the right hand the end of the left coat sleeve, and draw the sleeve off. To remove the coat is then easy; when you are free of it roll it up and throw it away, so that it may not entangle you. Next remove the waistcoat—a trifling matter.

The trousers are the most difficult to remove—and, if, possible they should be slit down the sides with a knife. If the swimmer has no knife, let him cast his suspenders from his shoulders, unbutton the trousers, and gradually

push them down over the legs, first with the right hand on the right side, then with the other hand on the opposite side, meanwhile sustaining the body with a slight "sculling" motion of the hands. Keep the head well back all the time, and do not attempt to raise it high in the water. Perform all the motions deliberately and without jerking.

It is better not to remove underclothing, particularly in cold weather, for a person venturing unclad into water at a low temperature is almost certain to catch a chill.

Women find greater difficulties than men, in removing their clothes, but if they can tread water and keep cool they can take off one garment after another until they are free of entangling silks. It is well for a woman to loosen her skirts and swim out of them before she takes off her shoes.

UPRIGHT SWIMMING

The system of upright swimming is in use in France and Germany, chiefly in the army, the navy, and the preparatory schools of

these institutions; in crossing small but deep streams, it has been found valuable.

The upright swimmer enters the water until he is beyond his depth. He bears his chin high, throws his head back upon his shoulders, and allows himself to sink until the water touches his lower lip, where he holds himself suspended, with arms stretched out and horizontal. To advance he sweeps his hands from front to rear, somewhat as in the enter-water stroke, and at the same time moves his legs somewhat as he moves them in walking, lifting the knees slightly higher, however, than he lifts them upon the land, and pressing backwards as strongly as possible with the whole leg.

TREADING WATER

When a swimmer desires to raise his head or arms high out of the water for any purpose—to reconnoitre, to search for a drowning person, to grasp a rope or a branch above his head, to eat (during a long swim)—he supports himself upright with strokes of his feet alone, and this process is called “treading water.”

There are several methods of treading water, but common to all is the erect position of the



TREADING WATER.

body, with the head thrown slightly back, and the inflated chest. The main difference between the methods is in the leg strokes.

According to one method, the swimmer places his hands upon his hips, and, with his legs, thrusts downward in a stroke somewhat like the leg movement of the breast stroke. If the swimmer paddles downward with his arms as well as his legs he can raise his body as far as the shoulders.

Between the strokes, however, it will sink again. To maintain it at a certain height, the swimmer must move his legs alternately, very much as he moves them in climbing a flight of stairs with very high steps.

The arms may hang at the sides, be folded across the chest, be placed akimbo, or be spread out horizontally and used to sustain the body.

By treading water a swimmer can sustain himself for a long time. It is in this position, too, that, in case of an accidental bath, he supports himself while he removes his coat, waist-coat, and trousers.

BREATHING

A sound method of breathing is essential to good swimming; yet many otherwise excellent

swimmers, misled, possibly, by treatises upon hygiene, and also by the methods essential to other sports, take in air improperly.

A swimmer should breathe not through the nose but through the mouth. A moment of thought will make the reasons for this clear to anyone. In the first place, amid the waves, any one of which may close in an instant the passages to the lungs, the most rapid method of inhalation is the best. Again, water accidentally drawn into the mouth is easily expelled or, in case of absolute need, swallowed; but if the nasal passages be filled, the discomfort causes most swimmers to gasp and choke, and causes beginners utterly to lose confidence.

Keep the mouth open, then, in the water. It is well to practise this before attempting to swim. Take in a deep breath and sink beneath the surface. Force air from the lungs into the mouth at some pressure and open the mouth. You will find, if you do this properly, that the water will not enter. The difficulty, however, is in opposing to the pressure of the water an exactly equal pressure of air; if you breathe

too hard, the air will escape from your lungs and rise through the nose in bubbles to the surface and your lungs will presently be empty ; if you do not maintain enough pressure, the water will push into the mouth, and if it does, close the mouth at once and come to the surface.

When you are accustomed to keeping your mouth open continuously, under water, apply your new habit to swimming.

The times for breathing, in the various strokes, are prescribed, as it were, by the positions of the head and chest during various movements. In general, when the motions of the arms tend to expand the chest, the swimmer must inhale ; when they tend to contract the chest, he must exhale.

In the side stroke and breast stroke, inhale air while you are pushing forward your arms, between the first and second positions, and exhale it as you are drawing the arms to the sides.

In the back stroke, inhale while you are throwing the arms behind you, and exhale as

you are sweeping to your sides; or, if you are not using your arms, take in air when you thrust out your legs.

In the racing strokes the head is submerged, except during the moment in each stroke when the left hand is lifted. The swimmer must expel the used-up air through his nose, and inhale a new supply through his mouth, all in that moment. In this stroke, also, it is well partly to close the mouth.

Some persons do not make a complete inspiration and expiration at every stroke; but I have found that if the movements of the swimmer are properly deliberate, a thorough change of air in the lungs is desirable as often as once in every set of movements.

The swimmer should be careful completely to fill and altogether to exhaust his lungs at every breath.





CHAPTER IV

UNDER WATER

HITHERTO we have considered those forms of swimming which enable man to keep afloat. But there is another branch of the art not less useful. Incidentally, it is productive of effects that are delightful to both swimmers and observers. This branch comprises swimming under water and the exercises which the ability to swim under water makes possible—diving and the fancy strokes.

SWIMMING UNDER WATER

As far as strokes are concerned there is little difference between swimming beneath the surface and swimming with head raised above it. The under-water swimmer uses the breast stroke. But instead of lifting his head he

holds it in line with his body, or, when he desires to descend, directs it downward; and instead of sweeping the water with palms almost parallel to the surface, he oars himself along with vertical palms, and thus gains power in his stroke.

For the average American or European, swimming under water is merely a pleasure. A few persons, only, owe their lives to the expertness of themselves or of others in moving beneath the surface. As a pleasure, however, the art is well worth the trouble involved in the learning.

Expertness in it depends mainly upon lung expansion. The swimmer who can take into his lungs the greatest quantity of air, in proportion to his size, all other conditions being equal, can remain longest under water. Other things are not always equal, but in general this rule holds good. Therefore whosoever desires to be a good under-water swimmer will do well to increase the depth of his lungs with strong inhalations drawn many times daily.

It is best to begin swimming beneath the surface at the depth of your shoulders. Before you sink for a swim, inhale two or three long breaths and exhale them again with some force, so that every particle of foul air may be expelled from the lungs. Then fill the lungs to the utmost, lift your hands above your head, bend over rapidly, plunge your hands and head down, and lift your feet. Begin to swim at once, direct your head downward, and with the legs push upwards, for the tendency of the body is to rise. Take long, deliberate strokes. When you find that you can no longer retain all the air in your lungs, let a little escape through your nose, and that will relieve you, so that you can continue longer submerged. When you must rise to the surface, throw your head and bend your body upwards, and you will slide to the surface in an instant. Blow the water violently out of your nose and mouth before you attempt to inhale a new breath.

Be careful, however,—and I would have all my readers attend to this warning—be careful

not to stay under water too long. It is easy to bring serious misfortune upon yourself by straining the various organs and muscles involved in the process of holding your breath. To this error expert swimmers are particularly liable, and there are cases on record of swimmers competing for prizes who asphyxiated themselves, exhausted all the air from their lungs, lacked strength to rise for a new supply, and would have been drowned had not assistance been at hand.

Begin easily, then, with a few seconds of immersion, and increase the time only in proportion to your growing powers of holding your breath. You will find that while swimming under water you are not able to remain without a fresh breath as long as you could when you merely sank to the bottom and remained quiet. Do not be discouraged and try to equal while exercising the record for "staying under" that you may have made while lying still. To do that is impossible. Be satisfied if you can swim for half a minute without rising—most persons cannot do much

better than this. Only the best swimmers can remain submerged for two minutes or two minutes and a half, and few of them can accomplish so much while moving.

When you have begun to be accustomed to the mysterious region of dim lights and indistinct objects, you will find much pleasure in flinging a coin or some bright object a dozen feet from you, in waiting until it has settled to the bottom, and in swimming under the surface to pick it up. Some swimmers become very expert at this, so expert that they can scatter scores of coins in a tank, or a prescribed area in the open water, and recover every one.

Professor J. Finney holds the record for this sport. He picked up eighty-two sunken coins with his mouth while his arms were tied behind him. Professor F. E. Dalton has picked up seventy-four plates from a diver's tank ten feet deep.

DIVING

Under-water swimming is the last step to the most exhilarating as well as the most pic-

turesque feat of a swimmer—diving. I know no pleasure more delightful than the rush through the air, the plunge into the cool, soft water, and either the downward course into the regions of darkness, mystery, and cold, or the immediate glide to the surface, difficult to accomplish and graceful to the eye of the spectator.

Perfection in diving depends upon the perfect balance of the body. The diver must enter the water in a straight line. His head, body, legs, and feet should successively plunge at the exact point where his hands first impinged the surface. He must not fall lengthwise upon the water, he must not bend his legs, nor hold them separated. He must not make a splash. He must cut the water as smoothly as if he were a lance hurled point first.

Most ordinary swimmers know this in a general way, but how many can put their knowledge into practice? Not many. At our watering places and even in our swimming tanks we see few divers who do not drop

through the air in a wriggling mass, with legs and arms thrust in various directions, each certain to make a splash of its own as it strikes water—if indeed the whole body does not flop down at full length with a hollow sound; in which case, if the dive has been from any height, the diver becomes a sore man with a reddened skin.

All this awkwardness in diving is due to hap-hazard training. The dive is a feat that must be learned gradually, and if it be thus learned it is within the compass of everyone.

It is best to learn diving from a flight of steep steps descending into the water, or some similar foothold. Begin from a step that is somewhat below the surface, so that your knees are covered. Stand upon this step with your feet together. Raise your hands above your head, presenting your palms to the front, and lock your thumbs. Bend over—without bending your knees—until the tips of your fingers touch the water, and fall in. After a few trials you will learn to give yourself a slight impulse forward so that your body will

not “slap” upon the water but will follow after your hands and head.

Next day stand upon a step a few inches above the water. It is well at this stage to have the assistance of others—preferably two persons. Their function is to seize your ankles and, as you plunge, to lift them, so that your body may describe a slight parabola before it enters the water. But they must be careful, on the other hand, not to lift too strongly; if they do, you will turn a half somersault and enter the water upon your back—a most bewildering process to the beginner.

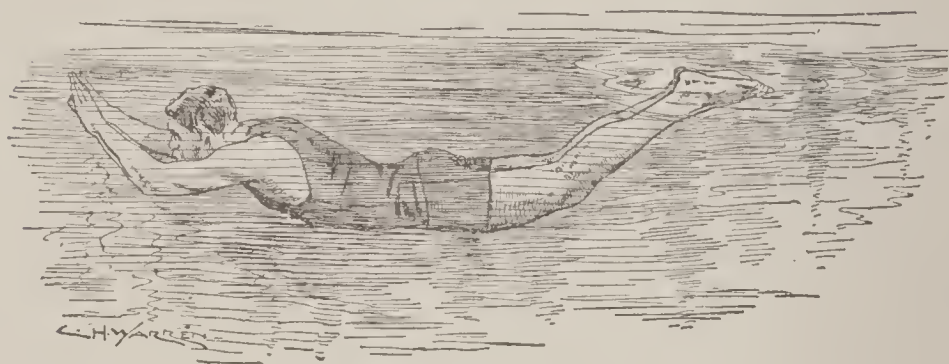
After a little time you will learn to throw your own legs upward. When you can do this without overbalancing yourself, begin to pay attention to rising from the dive. At the instant when your head enters the water, lift your hands—still joined—toward the surface, and at the same time curve your body upwards, so that you may immediately rise to the surface. The tips of a good diver’s fingers appear just as his feet are vanishing.

While you are learning this, do not forget



POSITION FOR FORWARD DIVE.

“form.” You will probably have begun naturally, by this time, to spring from your toes, bending your knees slightly for a start. You may also have learned to unlock your hands and to begin your spring with arms be-



SHALLOW DIVE.

hind you ready to be swung into place above your head as you leave your foothold. The best divers take their position “in the air”—arms straight above the head, head well back between the arms, body—with back very slightly hollowed—following, legs straight, pressed close together, and rigid, feet slanted so as to be as nearly as possible in line with the legs. The illustration shows the position excellently.

Learn to spring high in the air and to de-

scribe with the body a curve graceful before you enter the water. Learn also to strike the surface at a point as far as possible from your



POSITION IN AIR FOR DIVE.

foothold. Learn to hurl yourself forward, so as not to make a splash as you impinge the surface.

If you are going to swim under water after

you have dived, refresh your lungs by drawing a few long breaths as you refresh them for ordinary under-water swimming. As you exhale, bend far forward; as you inhale bring yourself to an erect position. At the third inhalation make your spring—as long and slanting as possible.

So much for shallow diving. When you are perfect in it, increase the height above the water of your base. Begin slowly, however, and proceed slowly. The increase in height of two feet a day is enough.

As you plunge from greater heights, you will instinctively adjust your movements to the new conditions. You will not spring as high; you will push yourself out farther. Do not forget, however, constantly to practise rising to the surface at once. You should be able to dive with your body almost perpendicular from a height of thirty feet, and yet so to curve your body upwards, after your head has entered the water, that your hands emerge just as your toes disappear. Ability to compass this may be of service to you in case you are obliged at

some time to plunge from a height into shallow water.

When you can dive from a point thirty feet above the water, cease to increase the height. Thirty feet is enough. Training at that height will enable you to dive from greater heights in case of emergency; and to risk the dangers of entering the water from great elevations merely for the sake of performing a thrilling feat is absurd. Nor is it well to attempt too "shallow" a dive from any height above six feet. Many serious accidents have occurred to professional swimmers who have launched themselves from heights of forty or fifty feet into tanks less than six feet deep. A very slight loss of balance will cause a diver from a great height to enter the water badly, and then he is done for; if he strikes the water flatlings he is certain to lose his breath temporarily, perhaps permanently. If he strikes it head first, being ill-prepared for his rise, he is likely to make an involuntary "deep" dive, and fracture his skull upon the bottom.

THE DIVING-BOARD

If anything is pleasanter than plain diving, it is diving from a spring-board. The knack in this exercise is to pull yourself together in the air, turn head downward, straighten out, balance yourself, and enter the water without making any splash or any sound louder than a "*chug*." It is a beautiful exercise, and to be performed in perfection only by him who has practised carefully.

DIVING BACKWARDS

The back dive is not very useful, but it is highly ornamental. Moreover, inasmuch as it teaches a learner to be at home in the water under disconcerting conditions it is worth learning.

Begin, as you began with the ordinary dive, standing upon a submerged step in a flight of stairs—or, if no step is at hand, a rock will do. Take your place with your back to the water, lift your hands above your head, with palms to the front and thumbs locked, as in the position for learning the forward dive.



POSITION FOR BACKWARD DIVE.

Throw back your head, bend backwards as far as you can and fall in, making as much effort as possible to strike the water with your hands first and to follow them with your head.

If you have never before plunged backwards you will find yourself confused as you penetrate deep into the water. For a moment you will lose the sense of direction. In general this moment is not productive of disaster, but I have known of cases that were; of back-divers who, in blind efforts to reach the surface, struggled downwards instead of upwards and forthwith lost their self-possession, took air into their lungs, and, but for assistance, would have perished. Therefore it is perhaps well to warn beginners in back-diving that they are likely at first to be confused, and to inform them that if they will be contented to lie still for a moment, their natural buoyancy will bring them to the surface. After a few trials they will learn to raise their hands and to curve their bodies upwards, and so come to the surface immediately, as they come after a forward dive.

The main difficulty in back-diving, as in forward diving, is in balancing the body. The beginner finds difficulty in raising his feet at the spring, and either falls awkwardly upon his back, or overbalances himself, turns a half summerset, and comes down struggling, face foremost. The good back-diver springs from his toes, swinging his arms above his head as he rises from the leap, describes an arc with his body, slips into the water with hardly a splash, and is immediately at the surface. Throughout the feat the body is not held straight as it is in a forward dive, but is curved backwards.

Having compassed the back-dive from the water level, try a greater elevation—curving the body slightly less as you make a higher start—but do not attempt anything above fifteen feet.

It is possible to make a variation of this dive, when springing from a board or wharf which projects over the water, by continuing to bend the body backwards after it has entered the water. Thus the swimmer's course

will be deflected backwards, he will glide beneath his starting-point and emerge nearer the shore than this point. It is not well, however, to attempt this feat upon a wharf that is supported by piles, for to avoid these in a backward "shoot," when the swimmer cannot see them, is not easy.

THE PLUNGE

It is possible to plunge (that is, to dive and "shoot" under water) seventy feet, but the average swimmer, if he has plunged forty feet, has done well. The two essentials for plunging are: good wind and ability to float on the breast. When the swimmer has pushed off from the spring-board to dive shallow and float along on the surface until his wind gives out, care should be taken to stiffen the legs by pointing the toes out behind you, and to keep the head well down between the arms. Do not attempt to look up before the plunge is finished, as this retards your progress.

TO TWIST IN THE DIVE

Stand with your back to the water. Bend

your knees and your elbows. Spring, and, just before your feet leave the ground, give your body the twisting impulse that will result in a half revolution in the air and bring you to the water, face downward. You can also throw your body to the right or left, and can enter the water at either hand by giving yourself the proper impulse in starting.

“ THE TURTLE DIVE ”

Stand facing—or with your back toward—the water at the edge of a wharf or rock or tank not more than two feet above the water. Stoop, embrace your knees with your arms, and tumble in.

JUMPING

To descend into water from a very high elevation, do not dive. Jump, presenting your feet instead of your head to the shock of meeting the water. Water looks soft, but falling upon it with a great impetus is only a little less likely to be fatal than falling upon solid earth.

Therefore the jumper must be extremely careful to balance himself properly. The correct position is as follows: the feet and legs straight and pressed close together; the arms pressed upon the sides; the head thrown somewhat back, so as to find protection behind the shoulders. In this position a man dropping vertically will pierce through the water like a wedge, but the slightest deflection from the perpendicular is extremely likely to be the cause of his death.

THE "FOOT DIVE"

Stand upon a slight elevation facing the water. Spring forwards and at the same time throw the hands above the head and the feet in advance of the body. When your feet strike the water incline them upwards, and you will glide to the surface, as you do in making a regular dive, except that you will proceed feet foremost.

CREEPING

Creeping is invaluable for avoiding entanglement by weeds should you find yourself sud-

denly among them. Being on your stomach, cast your hands forwards and your feet backwards, but close together, and thus advance, extending your arms and hands as far from your breast as possible. Press your fingers close together, and turn the palms of your hands—a little bent—towards the bottom; for, being in this posture, if you draw toward your breast with your hands and arms the water that is before you, by that you give time to the rest of your body to advance.

TO SWIM WITH THE LEGS FASTENED TOGETHER

The ankles being bound, either by weeds or otherwise, turn on your back, and place your hands across upon your breast, for in that posture you may gain the shore, by striking your knees one against the other, holding your legs meanwhile as high in the water as you can.

RECORDS : RACING

Possibly a few records for fast swimming may be interesting to the reader. The following were made with the racing strokes:

80 How to Swim

YDS.		MIN.	SEC.	
50 straightaway	.....	31	$\frac{4}{5}$	Am. (still water).
50 (2 turns, still water)	.....	29	$\frac{3}{5}$	
50 straightaway	.....	25	$\frac{2}{5}$	(with current).
100	“ still water...	I	15	$\frac{1}{5}$
100	“ across stream	I	07	$\frac{2}{5}$
100 (7 turns, still water)	.....	I	01	$\frac{1}{5}$

RECORDS: SWIMMING ON BACK

YDS.		MIN.	SEC.
100.....		I	20
800.....		16	29

RECORDS : UNDER WATER

Fifty yards can be done quicker on the breast stroke under than above water, because the body and head being entirely submerged are therefore no extra weight to carry. The fastest and best stroke under water is the breast stroke. Fifty yards can be covered in sixty-five seconds. Very few swimmers can remain under water long enough to do a hundred yards.

A SINGLE STROKE

How far can a man propel himself in a single stroke? I have covered twenty feet myself in a single breast stroke. The good average

swimmer ought to be able to do just double his own length from feet to arms extended. The longer the arms and legs, the bigger the sweep, therefore the longer the stroke. When the swimmer has made the strokes from the arms extended to the second and third positions and back to the first, let him take a good breath, drop the head between the arms under water, and float; thus he ought to cover fifteen feet. Good practice is to fix a certain distance and see in how few strokes you can pass over it.

THE CRAMP

The cramp is an involuntary, painful contraction of the muscles of legs and arms, brought on by cold, weariness, nervousness, or other causes. It is particularly severe in the water; it knots the muscles of swimmers, draws up the limbs, and renders them useless. It is dangerous to even the best expert.

The following rules are the most important to prevent cramp in the water:

1st. Never enter the water while the body is heated, as the sudden immersion from heat

to cold will affect the whole system and induce cramp. People have been known to lose their lives simply through not obeying this rule.

2d. Never stand too long on the shore after leaving the water without drying yourself. Particularly with delicate people exposure in bathing dress to the cold winds brings on a dangerous habit of shivers, resulting in cramp.

3d. Never stay too long in the water. Over-exposure to water is a dangerous practice for people who have not a strong constitution. As soon as you begin to feel cold, leave the water and dress immediately, or you will be quite likely to find your legs and arms contracting painfully. On leaving the water, with a rough towel either rub yourself or get someone to rub you very hard in order to make the blood circulate, and you will soon feel vigorous.

4th. Never enter deep water when you are tired.

5th. Do not *dread* the cramp. I have known imaginative people to bring on the contraction merely by expecting it—by “ suggestion ” as a psychologist would say.

6th. If suffering from a weak heart or any other complaint, never go into the water unless you have consulted a doctor beforehand.

7th. Never enter the water immediately after having eaten a hearty meal. Two hours at least should be allowed between eating and immersion.

Of course the arms and legs only are subject to the cramp, and the only remedy against it is to turn instantly upon the back, kicking the legs violently out of water. This will straighten the muscles. Rub the affected part with your hands for a few moments.

The principal thing is to prevent yourself from getting excited or frightened. Keep as cool as you can. Many a person has needlessly lost his life by going into a flurry when seized with the cramp—although help was at hand. In case you are unable to help yourself, hollow out for assistance and keep afloat upon your back until it arrives.

SWIMMING IN THE WAVES

The breast and back strokes are the best for

distance; one can rise and fall with the waves on the back without getting any water in the mouth. In a very rough sea, the breast stroke is better. I have found it wise to rise with the first and second wave and dive through the third, as that is always the highest. In entering the surf, too, wait for a high wave; rush toward it and dive through it before it breaks, and you will probably find yourself beyond the line of breakers when you emerge.

THE TIDE

Notice the set of the tide. When it is running out, to swim a long way from shore is dangerous. It is a well-known fact even a first-class swimmer can make but little headway against a strong tide. Therefore never swim out with the tide, unless you have a boat with you. Swim parallel with the shore, where you can always reach the bottom when feeling tired.

But if the tide is running in, you need not have fear of venturing out for some distance. The tide will bring you back to shore.

DON'TS

Don't go in swimming if you are tired out from bicycle-riding or a long walk.

Don't go out farther than a depth equal to your own height if you are liable to heart failure.

Don't swim away from the crowd if you are not certain you are an adept swimmer.

Don't stay in the water a minute after you have become fatigued or chilled.

Don't let your friends dare you to swim farther than you have swum before.

Don't attempt to rescue another person from drowning unless you are a good swimmer yourself.

Don't feel that your duty demands that you plunge in after every person who is liable to be drowned; remember that a drowning man is a lunatic generally and is liable to drag you to your own death unless you are capable of floating with a heavy load under all circumstances.

Don't plunge into the water to save a drowning person without first shouting loudly for help.

Don't lose your equilibrium because a fellow-swimmer is in danger of drowning; confused heads cause more drownings than inability to swim.

Don't throw yourself into the water to rescue another if a rope or a boat is within reasonable reach.

Don't lose your courage or your head if you happen to find yourself too far out to swim back yourself; simply turn on your back, place your hands under your back, paddle with your feet, and, above all, breathe naturally.

Don't yell at a man in danger of drowning; the best swimmer will drown if subject to a sudden fright.

Don't get frightened if you have a cramp; a cramp always comes in an arm or a leg; so simply raise the cramped part out of the water, float easily and rub the cramped part for a few moments, when you will be all right once more.

Don't stand on the bank after a swim until you have had yourself dried off with a towel.

Don't go in swimming within three hours after eating.

Don't push another person into the water, with the foolish but popular notion that you can thus teach him to swim; the best way is to let a person first get accustomed to being in the water, gradually going a little deeper.

Don't come in front of a drowning person to rescue him; approach him from the rear and grasp him by both biceps, and the more he struggles the more aid does he unknowingly give you to help him ashore.

Don't strike a man on the head to make him unconscious if he resents your aid while drowning; such a plan, though common in America, is as foolish as it is cruel and dangerous.





CHAPTER V

FANCY SWIMMING

BY PROF. F. E. DALTON

AFTER a swimmer has made himself proficient in the breast, side, back, and racing strokes, and has learned to dive, his education in ordinary branches of the art is complete. Fancy swimming has few uses except for a swimmer's own pleasure. Nevertheless, feats in the water will always be popular both with swimmers and onlookers, and only good can result from a knowledge of them.

The groundwork of trick and fancy swimming is the ability to float well on back and breast and to swim under water.

SWIMMING, FEET FOREMOST, ON BACK

Float on your back and scoop the water with your hands towards your head. When you



PROF. F. E. DALTON
(Showing Preliminary Position of Racing Dive)

desire to turn either way, use only the hand opposite to the way you want to go.

THE PROPELLER

Float on your back, extend your arms straight behind your head, and use your hands in pushing the water behind you. Do not



THE PROPELLER.

shove it directly away, however, but bend your hands backward at the wrists and slightly hollow the palms. Twist the wrists rapidly from one side to the other. You will find that this movement will propel you somewhat as the twisting of a screw propels a steamship. Or lie on your back with hands touching the side, then, with a movement of hands and wrists only, scoop the water towards the head which will propel your feet foremost. To direct your

course, stop using that hand in the direction you want to go and put more force into the other hand.

SWIMMING, FEET FOREMOST, ON BREAST

To do this a person must be able to float on his breast. Draw the arms back, till the backs of the hands are touching the sides of the body



SWIMMING, FEET FOREMOST, ON BREAST.

and make a circular sweep of the arms through the water till the palms of the hands touch above the head; then bring the hands back to sides of the body. This is a very difficult feat and can be done only by a good deal of practice.

The arms can be kept directly in front of you, and the water pushed away from you, and this will send you backwards.

Another way of swimming backwards is by using the legs alternately, drawing the water backwards by means of the toes and instep combined. Thus using your legs will enable you to float a great deal easier.

SWIMMING WITH BOTH LEGS OUT OF THE WATER

To learn this properly you must practise with one leg out of the water at a time. When



SWIMMING WITH BOTH LEGS OUT OF THE WATER.

holding one leg up in the air press the water

downwards with the hands and wrists held beneath the hips. This movement will propel you along, at the same time will keep the body from sinking, because of the weight of the leg out of the water. Practise with each leg out of the water separately and after a time together. Be careful to keep the hands a few inches under water.

STEAM TUG

This is done, lying on the back, by using the arms and hands to propel yourself along, head foremost, and raising each leg out of the water alternately and bringing it down flat on the water with force, which makes a big noise and splash. The trick is very diverting to the swimmer and onlookers.

SWIMMING WITH ONE HAND OUT OF THE WATER

Everyone ought to learn how to swim with one hand out of the water. The advantage of this knowledge to anyone who has a bundle to carry is obvious.

Practise first swimming with one hand. Then hold a small article with the other hand out of the water. Try to do this for a short distance at first, and increase the distance every time you go into the water. After you are perfect in swimming in this style, try to hold a larger article in your hand—as, for example, a stick or a gun.



SWIMMING WITH ONE HAND OUT OF THE WATER.

This style of swimming will be very useful to you in many ways. Suppose in the case of an accident you fall in the water with your clothes on, you will be able to undress yourself, swim with one hand, and hold your clothes in the other, and in this manner to reach shore.

In France, Germany, and Italy all soldiers

are taught to swim with one hand above water, as a preparation for crossing rivers in case of war.

THE SPINNING TOP

To spin with ease, the person should be somewhat buoyant. The breast must be well inflated. The attitude is that of sitting with



THE SPINNING TOP.

the feet crossed. The motion is effected by embracing the water with each hand alternately on the same side. In order to turn to the right, the water must be embraced with each hand alternately on the right hand, and to turn to the left, on the left side. This action causes a circular or spinning movement, which increases in velocity as it is continued.

THE ROLLER

Of all the playful ways of swimming, this is the most curious. A stream or regular current is the most favourable situation for rolling, as it very much assists the turn. To achieve this, the swimmer must place himself in the centre of the stream; he must inflate his breast, and hold his head well backward; his legs may either lie together or be crossed; and he must exercise his hands in the same manner as in spinning. By this alternate action of the hands with the assistance of the stream, some individuals will roll along in an extraordinary and pleasing manner.

TO SIT IN THE WATER

Expert swimmers can do almost what they please in the water; they can walk, stand perfectly upright, lie still, or even sit down. To sit, you must clasp both hands around your knees, draw in your breath, and so keep your breast inflated; hold your head upright and, lifting up and depressing successively your arms and legs, by that motion sustain yourself.

STANDING UPON THE HANDS

This feat is not as difficult in the water as it is on the land—yet it is not a feat to be accomplished without practice.

Wade in water up to your chest, inflate the lungs and turn over in the water head downwards. Throw your feet up and hollow your back well, with head turned upwards and only the tips of the fingers upon the bottom. Hold the legs straightened, with the toes pointing upwards. The trick is only a matter of balance and hollowing the back.

TURNING SOMERSAULTS IN THE WATER

Practise doing them backwards first, as that way is easier than forwards. Lie on your back, draw the legs up from the knees towards the chin, and throw the head backwards, at the same time hollowing the back, throwing the feet upwards, and working the body over by means of the hands.

To turn forwards, sit in the water with the feet drawn up to the body and turn over on the head, with the feet thrown well up, press

the water down with the hands, which will help the body round. These backward and forward somersaults can be kept up as long as the swimmer's breath holds out.

HOW TO SUPPORT AND PROPEL ONESELF

First without using the Hands and next without using the Legs

The swimmer should place the hands along the sides of the body, sink the legs much deeper than in ordinary swimming, and make a succession of strokes with them. These strokes should be much shorter and quicker than are used in ordinary swimming when the hands are at liberty. Next, tie the hands at the wrists, and imagine yourself a manacled captive trying to escape across a moat. Press the hands tightly together with the fingers close to each other, and the whole hand made as flat as possible. Turn slightly upon the left side, making the ordinary stroke with the legs, and bring the hands towards the left hip with a quick sweep, taking care to part them from

it as soon as the stroke is made. Then try to swim without the legs. Allow the feet to hang as low as they like, keep the head well back, and make the ordinary stroke with the hands, but instead of merely bringing them back, press them down at every stroke so as to lift the chin well out of the water. This is a very slow business, but still it should be practised, as the swimmer may happen to disable his legs, and ought to know how to manage without them.

Lastly, he should learn to swim when both hands and feet are tied together. This feat is a very superior one and always elicits much applause from spectators. It is what is technically termed a "gallery" stroke, yet it is really very easy, and can be performed by anyone who has practised the two former exercises. Hold the hands together as already mentioned and press the feet together at the ankles, then giving short, sharp strokes, the hands and feet working almost, but not quite, simultaneously. If you are performing this feat before spectators, add to the effect by

tying the hands and feet with handkerchiefs. Swimming is not made more difficult by the ligature, while the appearance of difficulty is very much increased.

WALKING ON THE WATER

This is a very graceful feat and rather difficult. The performer lies on his back, with the arms either by his side or under his head. He proceeds feet forwards by dropping each foot from the knee alternately, as if he were walking. The motive powers are the foot and the back part of the calf. As the swimmer drops it each time from his knee, he kicks the water under him, and that sends him forwards.

FEATS FOR TWO SWIMMERS

The Wrestle

For this, two swimmers are needed who can tread water well. They face each other with only their right hands out of the water. At a given word, each with his right hand tries to force the other's head under water. This feat can be varied by using the left hand only.



The Float

This is very simple, and yet looks very effective. One swimmer lies at full length upon his back in the water, and the other swimmer takes hold of his feet and pushes him forwards.

The Drive

In this trick the two swimmers float upon their backs headed in opposite directions, with the balls of the feet touching each other. Then they draw near each other by scooping the water with their hands and bending the knees up. The object of the swimmers is to see who can by straightening out his legs push the other away.

Over and Under

This feat is performed by two swimmers, who do it in the following manner. Both lie extended on their back, with the feet of one touching the head of the other; the latter clasps the ankles of the other and pulls himself underneath the body of the other, assisting himself by pulling the sides of the other's body.



When his head emerges out of the water, he must put his legs on the shoulders of the other swimmer; the latter then repeats the performance. This trick can be performed by three or four swimmers all extended out in one straight line. The first swimmer, as he goes along, pulls himself by the legs and body of each swimmer above him, all the while keeping his eyes open to see when he has reached the end of the line, and can emerge out of the water and put his legs on the shoulder of the last swimmer on the line. This is one of the best-looking feats in the water, and if done well always elicits much applause, people imagining it more difficult than it really is.

LEAP-FROG

Any number of bathers forming in single file can join in this easy sport. The last swimmer swims up to the next one, puts his hands on the other's shoulders, pushes him under, and at the same time raises himself and dives into the water over the second swimmer's head. He should take care to keep his legs open, so

as not to catch the other's head with them. He then goes to the next swimmer and leaps him in the same manner, and so on till he is in front of the line, when he must pause and "give a back" to all the other players. The same movement is repeated over and over by each one of the swimmers who finds himself last of the line.

UNDER-WATER TRICKS

These feats are chiefly for tank performers. In an ordinary pool, unless it had a white-tiled bottom, the tricks would not be noticeable.

Smoking

Take a lighted cigar, and after exhausting the lungs, put the *lighted* end of the cigar in the mouth unseen, and sink under water. Keep on blowing the smoke out to keep the cigar alight. Then rise to the surface, take the cigar out of the mouth and puff it up again in the orthodox way. Care should be taken that the onlookers don't see you turn the cigar before and after immersion.

Drinking

Take any ordinary bottle with a little milk corked in, exhaust the lungs, sink under, and uncork the bottle, at the same time put it to the lips, then breathe against the water as you open your mouth and drink steadily. After each gulp breathe outwards. When finished, cork the bottle up and it will rise to the surface instantly, proving that you have swallowed the contents.

Eating under Water

A sponge-cake, or something similar, is best. Exhaust the lungs, as it is impossible to sink slowly unless you do. Break off a piece of cake, breathe outwards, open the mouth and take the piece of sponge cake in, closing the mouth instantly. Eat it, and repeat these movements till you have finished the cake. Of course, these under-water tricks require big and strong lungs.

Singing

A pail is required to do this. Place the pail over the top of the head, and as you sink under water pull the pail over your head

straight down. This will act as a *diving-bell*. The air in it will keep out the water. Always sing something which will not strain the lungs unnecessarily, but be short and loud.

Writing

Take a slate and a piece of chalk under water and write something topical on both sides of the slate. When doing this feat always sit on the bottom of the tank cross-legged, as it gives a better effect.

WATER POLO

The increasing popularity of swimming as a sport is due in a great measure to the comparatively new game of water polo—or football upon the water, as it was called when it was invented in England a little more than a decade ago. In America the game, though newly imported, has already won great favour. Every athletic club of importance is equipped with a tank, and the water-polo contests are among the best attended “events” of the season.

Not football itself demands more skill, cour-



WATER POLO.

age, and endurance than this fine game of water polo—and on the other hand the newer game is less brutal than football, is cheaper, is more healthful, is quite as picturesque.

The game is played in a tank, or in open water, by two sides or teams of six members each. Each side defends a “goal” four feet long and a foot wide, set eighteen inches above the water line, and at the same time endeavours so to manœuvre as to enable one of its members to touch with the ball, held in his hand, the goal of its opponents. The goals are placed at either end of the tank.

An excellent conception of the game may be derived from reading over carefully the rules * adopted by the Amateur Athletic Union of the United States, under whose auspices the most important contests in water polo in this country are held.

AMERICAN RULES OF WATER POLO

RULE I. The ball shall be the regulation

* Taken from *Spaulding's Athletic Guide*, February, 1899, by permission of the American Sports Publishing Co.

white rubber Association football, No. 3, not less than 8 nor more than 9 inches in diameter.

RULE 2. The goals shall be spaces 4 feet long and 12 inches wide, marked "goal" in large letters; one shall be placed at either end of the tank, 18 inches above the water line, equally distant from either side.

RULE 3. To score a goal, the goal must be touched by the ball in the hand of an opposing player, and the greatest number of goals shall count game.

RULE 4. The contesting teams shall consist of six a side, with one reserve man who can take the place of one of his side in case of disablement only and receive prize if on winning side.

RULE 5. Time of play shall be eight minutes' actual play each way and five minutes' rest at half time.

RULE 6. The captains shall be playing members of teams they represent, and shall toss for choice of ends of tanks. The ends shall be changed at half time.

RULE 7. The referee shall throw the ball in

the centre of the tank, and the start for the ball shall be made only at the sound of the whistle.

RULE 8. The ball going out of the tank, it shall be thrown in the centre, opposite where it crosses the bounds.

RULE 9. No player is allowed to interfere with an opponent, unless such an opponent is in actual contact with the ball, or within 4 feet of it.

RULE 10. A mark shall be made four feet from each goal on the side of the tank and a line drawn across. No player shall come within his opponents' goal line until the ball is put in play within it.

The goal keepers of the side are alone exempt from this rule.

It shall be an offside play to cross the line ahead of the ball, and it shall be within the power of the referee to decide in such case whether the goal be fairly made or not.

RULE 11. Upon a goal being gained, the opposite teams shall go to their own end of the tank, and the ball shall be thrown by the ref-

eree into the centre on play being resumed, but time so occupied shall not be counted as in time of play.

RULE 12. Teams shall have an umpire at each goal line, who, upon goal being made, shall notify the referee, who shall blow a whistle and announce the same. In case the umpires disagree, the referee shall decide whether a goal be fairly made or not.

RULE 13. The referee shall decide all fouls, and if, in his opinion, a player commits a foul, he shall caution the team for the first offence, and for the second the player making it shall be ordered out of the water, remaining out until a goal has been scored.

RULE 14. The time occupied by disputes shall not be reckoned as in the time of play.

NOTE.—The ball shall always be kept on or as near the surface of the water as possible.

It shall be a foul to hold a player by any part of his costume.

Unnecessarily rough play shall, within the discrimination of the referee, be considered a foul.

It shall be a foul to push off from ends or

sides of tank, or to touch them except for the purpose of resting.

PHYSICAL EXERCISE AND TRAINING

Athletic exercises are taught in all our public schools and colleges, and when the young people leave school they are well acquainted with the most useful forms of physical exercise for their limbs and carriage; but the great drawback is that they neglect their exercise when not looked after.

Many swimmers neglect their training, and in thinking that they can win races without it, make a serious mistake. You will always find that the trained athlete will go through a full racing season, and do his best more consistently than the man who trains by fits and starts. To do good swimming in races, a man must be regular in his habits. He must abstain from smoking and intoxicating liquors, rise early in the morning, and never retire late at night.

For a swimmer to keep in good form

throughout the winter, it is advisable to take a cold bath every morning, and after coming out to rub oneself with a coarse Turkish towel or a pair of flesh gloves. Rub the body till you feel a warm, tingling sensation, and after you are dressed take a short run, you will find this will improve your wind wonderfully.

As soon as you begin regular training for the season, do a great deal of walking, as this will harden the muscles in your legs, and you will keep the whole body in condition. Swinging clubs or dumbbells is the best exercise for the arms. If you wish to become a fast swimmer, the first thing necessary is to practice and improve your staying power. This is done by swimming a short distance, increasing it every day at a steady pace at the rate of half your fastest speed. After practising this for a few weeks, practise shorter distances and faster speed if you are training for a 100 yards race. Never swim more than 75 yards at full speed, with now and again a swim at 200 yards to improve your wind and stamina. A week before the race have a time trial over the whole dis-

tance. It is advisable to practise the start at the word "go." A good or bad start may mean the gain or loss of a couple of yards, and this may win or lose the race.

If the start is from a height, dive shallow so as to lose no time in getting into your stroke. After winning your heat, don't fail to have a good rub down, and take as much rest as possible before the final.

Have your hair cut short; it gets dry much more quickly, and you carry less weight, and can cut through the water more quickly.

Always see that you have a bathing suit which fits the body like a glove. One-piece suits are the best, cut out low on the neck and arms, giving the latter free play. Always practise swimming in a straight line, so as not to get out of your course and lose ground. Don't lose your head in a race. Always avoid short strokes, but take a long swinging stroke and keep it up. Always save a little bit of strength for the finishing sprint.



CHAPTER VI

HOW TO SAVE LIFE

MANY persons are drowned by not attending to a few simple rules. Everyone is able to sustain himself in the water for a considerable time even if he is not a swimmer.

When a person is in danger of drowning, if he has the presence of mind to throw himself on his back, lower his arms under the water, and throw his head well back and not be frightened if his chin sinks below the surface, he will find that he floats with his mouth above water, and as long as he does not raise his arms out of water he will not go under. But most persons falling accidentally into the water lose their presence of mind, hello out, open their mouths, and draw water into the lungs. Always keep the lungs full of air. Remember,

also, I repeat, that as soon as you raise your hands above your head, you will sink at once. By keeping them below the surface, you can float till help arrives. The water in the ears will cause an affrighting sound, but that will not hurt you.

HOW TO RESCUE OTHERS

Many of our best swimmers shrink involuntarily from making the attempt to save a fellow-creature in danger of perishing in the water. Most people make a mistake in thinking that it takes a strong person to save a drowning man, but this is altogether wrong. Life saving requires only courage and dexterity. There are different ways of saving men from drowning. Which one is to be used depends a great deal upon the nature of the place where the accident happens; whether it is in the river, or in sea; near shore or in mid-ocean; in a place where help is at hand or in a lonely spot. There are, however, a few general rules. One of these is: never approach a drowning man at his front. If you do, he will wind his

arms around your neck and drag you down. Always go behind him. Seize the person by the arms near the shoulder; press your knee in the small of his back; this will straighten out the body horizontally, while the strain upon the arm of the rescuer in towing him will keep the face of the person rescued clear of the water thus enabling him to breathe freely; the rescuer using his right arm and his legs to enable him to reach the shore or other position of safety.

When the person endangered keeps turning round, as some have done with the writer, it is best to swim round him until the person can be so seized as mentioned, from behind, thus avoiding the drowning person's grasp, which is very tenacious. Should you, however, happen to be seized by the grasp of a drowning person, which so frequently proves fatal to both, do not lose your presence of mind, but, having taken a full breath, allow yourself to sink with the person. In nine cases out of ten he will let go his hold, and endeavour to reach the surface, believing that you are also in danger

of drowning. Should, however, the grasp be retained, endeavour to force the arms loose by pressing the knees against the drowning man's abdomen. In either case you can then seize the person from behind, rise to the surface, and strike out for shore, as already described.



A GOOD WAY OF SAVING AND BRINGING A MAN ASHORE.

The writer has frequently encountered persons who acted in both ways, and is therefore speaking from a long experience.

Another good plan is for the rescuer to throw himself upon his back, placing the person's head on the pit of his own stomach, kicking out vigorously with his legs at right angles, as

in back swimming, having previously taken in a line of alignment to steer by. This is the best method of carrying a helpless person a great distance.

These are the best known methods of saving life, and I have practised both successfully for many years.

A third method, efficacious when the imperilled man is already unconscious, is to swim very fast upon the breast, pushing your charge before you. In case he is insensible, the main object is to get him ashore at once, either above or beneath the water.

Again, you may support the drowning man with one hand grasping him under his right or left armpit, grasping his arm after you have turned him on his back, meanwhile propelling yourself with the other hand. When two rescuers are at hand, this is an easy method ; each seizes an arm of the person they mean to save, and together they make light work of towing him ashore.

When the person has sunk, and it becomes necessary to dive, you can be guided by the

air bubbles which rise to the surface, perpendicularly if the water is still, and diagonally if the stream is running. Immediately on reaching the bottom, seize the person; a slight jerk will suffice to raise the body, and the surface may be reached in a few seconds by pressing the water downward with the disengaged hand and both feet in the usual way (Fig. 5).

It may be, owing to the discolouration of the water or other causes, the would-be rescuer beneath the surface is unable to see the drowning man. In such a case it is best to wait above for a minute for a reappearance.

The following case is recorded, being interesting:

A man accidentally fell into a river; being unable to swim, he sank almost immediately. A brave young fellow, in his desire to save life, dived in the direction the drowning man was last seen. While the rescuer was down searching for the man who sank, the latter rose to the surface. The rescuer, coming up, found the man had sunk for the second time; instead of diving again, the fellow swam around

until the man again came to the surface, when the rescuer seized him by the back and towed him ashore.

Before making the attempt at rescue, divest yourself of as much clothing as possible, tearing off your garments if necessary; at all events remove your boots if time permits. There may be cases when time will not permit the removal of any portion of clothing.

I have been frequently asked why a drowning person rises to the surface two or three times. My own belief is, that the air remaining in the lungs may not become entirely exhausted at the first immersion, consequently the body possesses sufficient buoyancy to rise again. This may be repeated a second or even a third time, according to the quantity of air in the lungs.

If you spring from a boat to save a drowning man—or indeed for any reason—leap from the stern. Over the stern, also, you must drag a struggling person from the water, or if you are yourself swimming, climb into the boat. If the boat is light and the weight of a person bears

upon her side, she may capsize—particularly if the person is making strong, ill-directed movements to climb in.

RESUSCITATION

When you have brought a half-drowned man ashore, your duty toward him is not over. Your next task is to “restore him to himself.”

If he is not unconscious you will not have much difficulty. A glass of brandy will set his blood to circulating freely, and after that, warm blankets, rest, and rubbing will cure him of the shock consequent to his peril.

But if he has lost consciousness, your task is more difficult. There are several methods for resuscitating the apparently drowned. I shall give here three of these methods.

The first is that adopted by the Royal Humane Society of England, and printed by them among their rules and regulations.

Begin treatment in the open air as soon as you have brought the patient ashore. Meanwhile, send for medical assistance, blankets, and dry clothing.

Expose the patient's throat and chest to the wind — except in very severe weather. Remove all tight clothing from neck and chest. Take off the suspenders.

The points to be aimed at are—first and *immediately*, the RESTORATION OF BREATHING; and, secondly, after breathing is restored, the PROMOTION OF WARMTH AND CIRCULATION.

The efforts to *restore breathing* must be commenced immediately and energetically, and persevered in for one or two hours, or until a medical man has pronounced that life is extinct.

Efforts to promote *warmth* and *circulation*, beyond removing the wet clothes and drying the skin, must not be made until the first appearance of natural breathing, for if circulation of the blood be induced before breathing has recommenced, the restoration to life will be endangered.

TO RESTORE BREATHING: HALL'S METHOD

TO CLEAR THE THROAT.—Place the patient on the floor or the ground with the face down-

wards, and one of the arms under the forehead, in which position all fluids will more readily escape by the mouth, and the tongue itself will fall forward, leaving the entrance into the windpipe free. Assist this operation by wiping and cleansing the mouth.

If satisfactory breathing commences, use the treatment described below to promote warmth. If there be only slight breathing, or no breathing, or if the breathing fail, then—

TO EXCITE BREATHING.—Turn the patient well and instantly on the side, supporting the head, and excite the nostrils with snuff, harts-horn, and smelling-salts, or tickle the throat with a feather, etc., if they are at hand. Rub the chest and face warm, and dash cold water, or cold and hot water alternately, on them.

If there be no success, lose not a moment, but instantly—

TO IMITATE BREATHING.—Replace the patient on the face, raising and supporting the chest well on a folded coat or other article of dress. Turn the patient very gently on the

side and a little beyond, and then briskly on the face, back again ; repeating these measures cautiously, efficiently, and perseveringly about



HALL'S METHOD OF RESUSCITATION.

fifteen times in the minute, or once every four or five seconds, occasionally varying the side. (*By placing the patient on the chest, the weight of the body forces the air out ; when turned on the side this pressure is removed, and air enters the chest.*)

On each occasion that the body is replaced on the face make uniform but efficient pressure, with brisk movement, on the back between and below the shoulder-blades or bones on each side, removing the pressure immediately before turning the body on the side. During the whole of the operations let one person attend solely to the movements of the head, and of the arm placed under it.

The result is *Respiration*, or *Natural Breathing*, and, if not too late, *Life*.

Whilst the above operations are being proceeded with, dry the hands and feet; and as soon as dry clothing or blankets can be procured strip the body and cover, or gradually re-clothe it, but take care not to interfere with the efforts to restore breathing.

SILVESTER'S METHOD

Should these methods not prove successful in the course of from two to five minutes, proceed to imitate breathing by Dr. Silvester's method, as follows:

Place the patient on the back on a flat surface, inclined a little upwards from the feet; raise and support the head and shoulders on a small, firm cushion or folded article of dress placed under the shoulder-blades.

Draw forward the patient's tongue, and keep it projected beyond the lips: an elastic band over the tongue and under the chin will answer this purpose, or a piece of string or tape may be tied round them, or by raising the lower

jaw the teeth may be made to retain the tongue in that position. Remove all tight clothing from about the neck and chest, especially the braces.

TO IMITATE THE MOVEMENTS OF BREATHING.—Standing at the patient's head, grasp



SILVESTER'S METHOD OF ARTIFICIAL BREATHING. FIG. 1.

the arms just above the elbows, draw them gently and steadily upwards above the head, and *keep them stretched* upwards for two sec-



ARTIFICIAL BREATHING. FIG. 2.

onds. (*By this means air is drawn into the lungs.*) Then turn down the patient's arms,

and press them gently and firmly for two seconds against the sides of the chest. (*By this means air is pressed out of the lungs.*)

Repeat these measures alternately, deliberately, and perseveringly, about fifteen times in a minute, until a spontaneous effort to respire is perceived, immediately upon which cease to imitate the movements of breathing, and proceed to induce circulation and warmth.



ARTIFICIAL BREATHING. FIG. 3.

Still another method of producing artificial respiration is to place the patient upon his back—having thoroughly cleared his throat. Insert beneath his waist some soft body that will raise it—a coat rolled into a cylinder will do.

Kneel by the patient's knees; let yourself

fall forward, stretch forth your hands and seize the patient by the waist, violently compressing it. The object is to press the air from the lungs, and if this is not accomplished the movement is not rightly performed.

After a second of compression, push yourself back to a kneeling posture. Repeat these movements once in three seconds.

This method, however, has not met with the favour held by the others.

TREATMENT AFTER BREATHING HAS BEEN RESTORED

TO PROMOTE WARMTH AND CIRCULATION.
—Commence rubbing the limbs upwards, with firm grasping pressure and energy, using handkerchiefs, flannels, etc. [*By this measure the blood is propelled along the veins towards the heart.*] The friction must be continued under the blanket or over the dry clothing.

Promote the warmth of the body by the application of hot flannels, bottles or bladders of hot water, heated bricks, etc., to the pit of the

stomach, the armpits, between the thighs, and the soles of the feet.

If the patient has been carried to a house after respiration has been restored, be careful to let the air play freely about the room.

On the restoration of life a teaspoonful of warm water should be given; and then, if the power of swallowing have returned, small quantities of wine, warm brandy-and-water, or coffee should be administered. The patient should be kept in bed, and a disposition to sleep encouraged.

GENERAL OBSERVATIONS.—The above treatment should be persevered in for some hours, as it is an erroneous opinion that persons are irrecoverable because life does not soon make its appearance, some having been restored after many hours' seeming lifelessness.

APPEARANCES WHICH GENERALLY ACCOMPANY DEATH.—Breathing and the heart's action cease entirely; the eyelids are generally half closed, the pupils dilated, the jaws clenched, the fingers semi-contracted, the tongue approaches to the under edges of the

lips, and these, as well as the nostrils, are covered with a frothy mucus. Coldness and pallor of surface increase.

In the winter, when the rivers are covered with ice, many accidents happen by persons breaking into the ice. Let all people go away from the ice, get a ladder and rope as quickly as possible, and throw the rope to the drowning man, with a life-saving belt. Break all the weak ice away, until you can get a firm landing for him.

CAUTIONS.—Prevent unnecessary crowding of persons round the body, especially if in an apartment.

Avoid rough usage, and do not allow the body to remain on the back unless the tongue is secured.

Under no circumstances hold the body up by the feet.

On no account place the body in a warm bath, unless under medical direction, and even then it should be employed as a momentary excitant.



CHAPTER VII

UPON PUBLIC EDUCATION IN SWIMMING

BEFORE I lay down my pen, I must say one more word upon a subject that is ever present in my mind—the desirability, nay, the necessity, of teaching our public-school children to swim, and of affording all citizens opportunities for bathing all the year round. I am addressing this chapter to my readers in America. In England by Act of Parliament instruction in swimming in public schools has been made compulsory. Upon the continent, in every city of importance, there are public baths, free to those who cannot afford to pay.

In America, what is the condition of affairs? In most of the seaboard cities there are free baths in the summer; that is excellent as far as it goes, but it does not go far, for in New

York, for example, ten times as many houses as now exist would hardly accommodate those who desire to bathe and to learn swimming

Even these twelve baths, supposed to accommodate that proportion of four millions of people which cares for the water, are closed in September. During the winter, throughout this country there are but two cities, I believe, which furnish free bathing facilities.

To this need of them, however, the cities are waking up, and in the most important centres of population appropriations for public bath-houses have been made. There is, then, little need of dwelling upon this phase of the question—except for a moment to point out that a corps of instructors in swimming ought to be in attendance at every bath.

The more important subject is the necessity for establishing swimming-baths in every schoolhouse, and in making the swimming-class as important a feature of education as the geography class.

I would have a tank in the basement of every schoolhouse, I repeat, and an instructor to

teach swimming. I would have laws passed providing that every child should learn to swim.

Perhaps certain of my readers will smile at this, asking whether I have estimated the cost. I have estimated it. In each of those schoolhouses which are already provided with asphalt floors in the basements, the expense of putting in a tank ought not to exceed \$6000—including equipment of towels, etc. In the running expenses I reckon \$1500 for the instructor and his assistant; another \$1000 for an instructress of the girls and her assistant; \$1000 for washing towels, drying them, repairs, etc., and for heating, lighting, etc., perhaps \$1000 more. Roughly, \$5000 a year for each bath. A heavy item of expense? Not when the advantage to be derived from it is considered. Ask any physician whether the better health to the community that would come if each member of it should bathe once a day is not worth \$5000 a year spent upon every schoolhouse in every city. Every member of a community that had grown up under a system of daily

baths would bathe. The habit of bathing is not one that decreases as the child matures.

Besides the benefit to health, there is the benefit to public safety. No longer would our ships leave port, as they do now, with crews of men not half of whom can keep afloat if they fall overboard. No longer would only a small percentage of our police officers be competent to save persons who fall from wharves. I am including these merely as examples; I need hardly add that other illustrations could be drawn *ad infinitum*.

America spends vast sums upon less important measures than instruction in swimming. Is it preposterous to suggest that some of this money might be devoted to so noble an object as the cleanliness and safety of the people? I believe not, and I am making it my chief object in life to present the cause of public education in swimming to the public.

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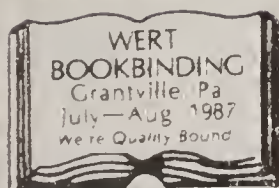
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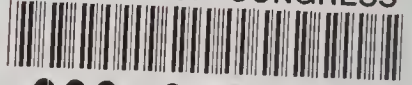
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